REMARKS

This amendment is being filed in response to the non-final Office Action dated July 5, 2007. By this Response, claims 1, 4, 9, 10, 14-16 and 17-19 are amended without prejudice. No new matter is introduced. Claims 1-19 are now active for examination.

The Office Action and Interview

The Examiner is thanked for the favorable indication that claim 8 would be allowable if it is rewritten in independent form including all limitations from its base claims and any intervening claims. The Office Action rejects claim 1-7, 9, 14-15 and 17-18 under 35 U.S. C. §102(e) as being anticipated by Sugiyama et al. (U.S. Patent 6,858,827). Claims 10-13, 16 and 19 stand rejected under 35 U.S. C. §103(a) as being unpatentable over Sugiyama et al. (6,858,827) in view of Kudo (U.S. Patent 6,501,503).

The Examiner is further thanked for the courtesy of granting a telephone interview on April 29, 2008, during which differences between the claims and Sugiyama and Kudo are identified and discussed. Applicants' representative pointed out that Sugiyama and Kudo, even if combined, do not teach that different addition patterns for adding pixels around a give pixel are assigned and used corresponding to different types of image processing (independent claims 1, 14, 17), different types of vehicular behaviors (independent claims 9, 15, 15), or different types of vibrations of an image-capturing apparatus (claims 10, 16, 19). Possible claim amendments clarifying these differences were discussed. The Examiner felt that the documents did not appear to have disclosed these features, but indicated that a final determination will be made upon further review and search of prior art. A set of proposed claim amendments reflecting the interview discussions and identical to those presented herein were submitted after the conclusion of the Interview, for consideration by the Examiner. The Examiner courteously

indicated that if the amendments do not place the application in condition for allowance, the Examiner would contact Applicants' representative to discuss.

The Anticipation Rejection Is Overcome

The Office Action rejects claim 1-7, 9, 14-15 and 17-18 as being anticipated by Sugiyama. By the response, independent claims 1, 9, 14, 15, 17 and 18 are amended. It is submitted that the anticipation rejection is overcome because Sugiyama fails to identically disclose every limitation of the claims.

Claim 1, as amended, describes an image-capturing apparatus comprising an image-capturing unit having a plurality of pixels disposed two-dimensionally, an addition pattern generating unit configured to specify an addition pattern, and an adding unit configured to generate an image by adding, **according** to the addition pattern, outputs of selected pixels present around a given pixel to an output of the given pixel. The selected pixels are **chosen** according to the addition pattern. The addition pattern generating unit specifies different addition patterns corresponding to different types of image processing. An image processing unit is provided to process the image resulting from addition executed by the adding unit, according to a type of image processing. When the image processing unit switches from a first type of image processing to a second type of image processing, the addition pattern generating unit **changes** the specified addition pattern from an addition pattern corresponding to the first type of image processing to an addition pattern corresponding to the second type of image processing, and the adding unit **switches** from the addition pattern corresponding to the first type of image processing to the addition pattern corresponding to the second type of image processing when adding outputs of selected pixels. Appropriate support for the amendment can be found in,

for example, Figs. 2-5, page 5, second and third paragraphs, page 6, line 23 through page 8, line 11, and page 14, line 5 through page 15, line 4 of the written description.

For example, the "addition pattern" may include adding outputs of pixels that are continuous along a longitudinal direction (Fig. 2), adding outputs of pixels that are continuous along a lateral direction (Fig. 3), or adding outputs of pixels continuous in a specified pattern or direction (Figs. 4 and 5). The type of image processing may include detecting an edge in an image or detecting a predetermined target object such as a pedestrian or a vehicle. The unique designs of the claims produce numerous benefits. Generating the addition pattern according to the type of image processing or vehicular behavior allows obtaining images with improved sensitivity without lowering the resolution.

In contract, while Sugiyama describes to an image-capturing apparatus that performs arithmetic operations on pixel signals, Sugiyama does **not** describes the specific manners that an addition pattern is generated as specified in the claims. Sugiyama only generally describes that treating and processing signals of four pixels constituting color filters as a single pixel. However, this alleged addition of pixels constituting color filters is performed using a single, fixed pattern. Sugiyama does **not** describe that **different addition patterns** are generated **according** to **different types of image processing**, as described in claim 1. Sugiyama also fails to describe that "when the image processing unit switches from a first type of image processing to a second type of image processing: the addition pattern generating unit changes the specified addition pattern from an addition pattern corresponding to the first type of vehicular behavior to an addition pattern corresponding to the second type of vehicular behavior; and the adding unit switches from the addition pattern corresponding to the first type of vehicular behavior to the

addition pattern corresponding to the second type of vehicular behavior when adding outputs of selected pixels," as described in claim 1.

Incidentally, it was noted that Sugiyama discusses turning LEDs on and off so that an object in the foreground against the background can be recognized. See col. 15, lines 35-46 of Sugiyama and page 5, first paragraph of the Office Action. However, as correctly acknowledged by the Office Action, this operation intends to alter light source intensities. The mere turning LEDs on and off has not nothing to do with **choosing different addition patterns according to different types of image processing for selecting different pixels for adding to a given pixel**, or "when the image processing unit <u>switches</u> from a first type of image processing to a second type of image processing: the addition pattern generating unit <u>changes</u> the specified addition pattern from an addition pattern corresponding to the first type of vehicular behavior to an addition pattern corresponding to the second type of vehicular behavior; and the adding unit <u>switches</u> from the addition pattern corresponding to the first type of vehicular behavior to the addition pattern corresponding to the second type of vehicular behavior when adding outputs of selected pixels," as described in claim 1.

Since Sugiyama fails to meet every limitation of claim 1, the anticipation rejection of claim 1 is untenable and should be withdrawn.

Claim 9 describes an image-capturing apparatus including an addition pattern generating unit configured to specify an addition pattern <u>according</u> to <u>a vehicular behavior</u> (such as a vertical motion or a change in a yaw rate caused by steering) detected by a vehicular behavior detection device, and an adding unit configured to generate an image by <u>adding, according to the addition pattern, outputs of selected pixels present around a given pixel to an output of the given pixel</u>. The selected pixels are chosen according to the addition pattern. An image processing

unit is provided to process the image resulting from addition executed by the adding unit. The addition pattern generating unit specifies **different addition patterns** corresponding to **different types of vehicular behaviors**. When the detected vehicular behavior **changes** from a first type of vehicular behavior to a second type of vehicular behavior, the addition pattern generating unit **changes** the specified addition pattern from an addition pattern corresponding to the first type of vehicular behavior to an addition pattern corresponding to the second type of vehicular behavior; and the adding unit **switches** from the addition pattern corresponding to the first type of vehicular behavior to the addition pattern corresponding to the second type of vehicular behavior when adding outputs of selected pixels.

As discussed earlier with respect to claim 1, in Sugiyama, the alleged addition of pixels constituting color filters is performed using a single, fixed pattern. Sugiyama does **not** describe that **different addition patterns** are generated **according to different types of vehicular behaviors**. Sugiyama also fails to disclose that "when the detected vehicular behavior **changes** from a first type of vehicular behavior to a second type of vehicular behavior, the addition pattern generating unit **changes** the specified addition pattern from an addition pattern corresponding to the first type of vehicular behavior to an addition pattern corresponding to the second type of vehicular behavior; and the adding unit **switches** from the addition pattern corresponding to the first type of vehicular behavior to the addition pattern corresponding to the second type of vehicular behavior when adding outputs of selected pixels," as described in claim 9. Consequently, claim 9 is patentable over Sugiyama.

Claims 14, 15, 17 and 18 include descriptions substantially comparable to those of claims 1 and 9, respectively. Therefore, claims 14, 15, 17 and 18 are patentable over Sugiyama for at least the same reasons as for claims 1 and 9.

Claims 2-7, directly or indirectly, depend on claim 1 and hence are patentable by virtue of their dependencies.

The Obviousness Rejection Is Overcome

Claims 10-13, 16 and 19 are rejected as being unpatentable over Sugiyama et al. in view of Kudo. By This Response, independent claims 10, 16 and 19 are amended. It is submitted that the obviousness rejection is overcome because the cited documents, even if combined, do not meet every limitation of the claims.

Claim 10, as amended, An image-capturing apparatus comprising an addition pattern generating unit configured to specify an addition pattern according to a type of vibration of the image-capturing apparatus, and an adding unit configured to generate an image by adding, according to the addition pattern, outputs of selected pixels present around a given pixel to an output of the given pixels. The addition pattern generating unit **specifies** different addition patterns corresponding to different types of vibration of the image-capturing apparatus. The selected pixels are chosen according to the addition pattern. An image processing unit is provided to process the image resulting from addition executed by the adding unit. When the detected vibrations of the image-capturing apparatus **changes** from a first type of vibration to a second type of vibration: an addition pattern generating unit **changes** the specified addition pattern from an addition pattern corresponding to the first type of vibration to an addition pattern corresponding to the second type of vibration; and the adding unit **switches** from the addition pattern corresponding to the first type of vibration to the addition pattern corresponding to the second type of vibration when adding outputs of selected pixels.

As discussed earlier relative to claims 1 and 9, Sugiyama never describes assigning different addition patterns corresponding to different types of vibration of the image-capturing

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apparatus, as described in claim 10. Sugiyama also fails to disclose that "when the detected vibrations of the image-capturing apparatus **changes** from a first type of vibration to a second type of vibration: an addition pattern generating unit **changes** the specified addition pattern from an addition pattern corresponding to the first type of vibration to an addition pattern corresponding to the second type of vibration; and the adding unit **switches** from the addition pattern corresponding to the first type of vibration to the addition pattern corresponding to the second type of vibration when adding outputs of selected pixels," as described in claim 10.

The other document, Kudo, was cited for its purported discussion of using a vibration detecting device to sense a vibration of a camera and addressing image blur caused by the vibration by "moving the readout address…according to the result of detection supplied from the image motion detection circuit 107." See col. 5, lines 46-51 of Kudo. Sugiyama and Kudo, even if combined, only suggest a camera system which includes a vibration detecting device to "move the readout address" to avoid blur and additions of pixels of color filters. No matter what types of vibrations are detected, the resulting system always uses **the same type of addition** (four pixels around a given pixel) to add the color filter pixels. Accordingly, the combination of Sugiyama and Kudo does not teach or suggest that a different addition pattern should be selected and applied according to different types of vibrations, so that selected pixels are added to the given pixel in a different manner. Kudo also fails to disclose that when the detected vibrations of the image-capturing apparatus **changes** from a first type of vibration to a second type of vibration: an addition pattern generating unit **changes** the specified addition pattern from an addition pattern corresponding to the first type of vibration to an addition pattern corresponding to the second type of vibration; and the adding unit **switches** from the addition pattern corresponding to the first type of vibration to the addition pattern corresponding to the second

type of vibration when adding outputs of selected pixels, as described in claim 10. Therefore, even if Sugiyama is modified by Kudo, the combination of documents still fails to meet every limitation of claim 1. Accordingly, claim 10 is patentable over Sugiyama and Kudo.

Independent claims 16 and 19 include descriptions substantially comparable to claim 10. Therefore, claims 16 and 19 also are patentable for the same reasons as for claim 10.

Claims 11-13 are patentable by virtue of their dependencies.

CONCLUSION

Applicant believes that this application is in condition for allowance, and request that the Examiner give the application favorable reconsideration and permit it to issue as a patent. If the Examiner believes that the application can be put in even better condition for allowance, the Examiner is invited to contact Applicant's representatives listed below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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